

Listing of Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Previously Amended) A method for heat treating a semiconductor wafer, said method comprising the steps of:

placing a semiconductor wafer in a thermal processing chamber that is in communication with a plurality of lamps, said semiconductor wafer defining a plurality of localized regions along a radial axis;

adjusting the temperature of said semiconductor wafer to a predetermined temperature according to a predetermined heat cycle, said predetermined heat cycle including a heating stage in which said semiconductor wafer is heated by said plurality of lamps;

during at least one stage of said predetermined heat cycle, providing a gas to selectively control the temperature of at least one of said localized regions of said semiconductor wafer to minimize temperature deviation of said at least one localized region from said predetermined temperature.

2. (Original) A method as defined in claim 1, further comprising the steps of:

monitoring the temperature of said at least one localized region with a temperature sensing device, said temperature sensing device being in communication with a controller; and

based on information received by said controller from said temperature sensing device, controlling the temperature of said at least one localized region according to said predetermined heat cycle.

3. (Cancelled)
4. (Previously Amended) A method as defined in claim 1, further comprising the step of controlling the temperature of said gas.
5. (Previously Amended) A method as defined in claim 1, further comprising the step of controlling the flow rate of said gas.
6. (Original) A method as defined in claim 1, wherein said temperature deviation is less than about 100°C.
7. (Original) A method as defined in claim 1, wherein said temperature deviation is less than about 25°C.
8. (Original) A method as defined in claim 1, wherein said at least one localized region comprises less than about 50% of a cross-section of said semiconductor wafer.
9. (Original) A method as defined in claim 1, wherein said at least one localized region comprises less than about 25% of a cross-section of said semiconductor wafer.
10. (Original) A method as defined in claim 1, wherein said at least one localized region comprises less than about 15% of a cross-section of said semiconductor wafer.
11. (Previously Amended) A method as defined in claim 1, wherein said temperature of said at least one localized region is decreased during said heating stage of said predetermined heat cycle.
12. (Original) A method as defined in claim 1, wherein said predetermined heat cycle further comprises a cooling stage.

13. (Previously Amended) A method as defined in claim 12, wherein said temperature of said at least one localized region is increased during said cooling stage of said predetermined heat cycle.

14-41. (Withdrawn)

42. (Previously Added) A method as defined in claim 1, wherein said gas used to selectively control the temperature of at least one of said localized regions is supplied by a device located below-said semiconductor wafer.

43. (Cancelled)

44. (Previously Added) A method as defined in claim 1, wherein said gas used to selectively control the temperature of at least one of said localized regions is supplied by a device located above said semiconductor wafer.

45. (Previously-Added) A method as defined in claim 44, wherein said device comprises a gas pipe having a plurality of gas outlets.

46. (Previously Added) A method for heat treating a semiconductor wafer, said method comprising the steps of:

placing a semiconductor wafer in a thermal processing chamber, said semiconductor wafer defining a plurality of localized regions along a radial-axis;
adjusting the temperature of said semiconductor wafer using a plurality of lamps to a predetermined temperature according to a predetermined heat cycle, said predetermined heat cycle including a heat stage; w/ in chw |

during at least one stage of predetermined heat cycle, providing a gas to selectively control the temperature of at least one of said localized regions of said semiconductor wafer to minimize temperature deviation of said at least one localized

region from said predetermined temperature, said gas being supplied by a reflective device located below said semiconductor wafer.

wft
in claim

47. (Previously Added) A method as defined in claim 46, wherein a plurality of gas outlets extend through said reflective device.

48. (Previously Added) A method for heat treating a semiconductor wafer, said method comprising the steps of:

placing a semiconductor wafer in a thermal processing chamber, said semiconductor wafer defining a plurality of localized regions along a radial axis;
adjusting the temperature of said semiconductor wafer using a plurality of lamps to a predetermined temperature according to a predetermined heat cycle, said predetermined heat cycle including a heat stage;

during at least one stage of predetermined heat cycle, providing a gas to selectively control the temperature of at least one of said localized regions of said semiconductor wafer to minimize temperature deviation of said at least one localized region from said predetermined temperature, said gas being supplied by a gas pipe located above said semiconductor wafer, wherein said gas pipe has a plurality of gas outlets.

] wft in claim 46

49. (Previously Added) A method for heat treating a semiconductor wafer, said method comprising the steps of:

placing a semiconductor wafer in a thermal processing chamber that is in communication with a plurality of lamps, said semiconductor wafer defining a plurality of localized regions along a radial axis;

adjusting the temperature of said semiconductor wafer to a predetermined temperature according to a predetermined heat cycle, said predetermined heat cycle including a heating stage in which said semiconductor wafer is heated by said plurality of lamps;

during at least one stage of said predetermined heat cycle, providing a gas to selectively control the temperature of at least one of said localized regions of said semiconductor wafer to minimize temperature deviation of said at least one localized region from said predetermined temperature, wherein said gas used to selectively control the temperature of at least one of said localized regions is supplied by a device located below said semiconductor wafer, wherein said device is a reflective device through which a plurality of gas outlets extend.

50. (New) A method for heat treating a semiconductor wafer, said method comprising the steps of:

placing a semiconductor wafer in a thermal processing chamber that is in communication with a plurality of lamps, said semiconductor wafer defining a plurality of localized regions along a radial axis;

adjusting the temperature of said semiconductor wafer to a predetermined temperature according to a predetermined heat cycle, said predetermined heat cycle including a heating stage in which said semiconductor wafer is heated by said plurality of lamps and a cooling stage; *not in Clm 1, 46, 48, 49*

during said cooling stage, providing a gas to selectively control the temperature of at least one of said localized regions of said semiconductor wafer to minimize

temperature deviation of said at least one localized region from said predetermined temperature.

51. (New) A method as defined in claim 50, further comprising the steps of:

monitoring the temperature of said at least one localized region with a temperature sensing device, said temperature sensing device being in communication with a controller; and

based on information received by said controller from said temperature sensing device, controlling the temperature of said at least one localized region according to said predetermined heat cycle.

52. (New) A method as defined in claim 50, further comprising the step of controlling the temperature of said gas.

53. (New) A method as defined in claim 50, further comprising the step of controlling the flow rate of said gas.

54. (New) A method as defined in claim 50, wherein said temperature deviation is less than about 100°C.

55. (New) A method as defined in claim 50, wherein said temperature deviation is less than about 25°C..

56. (New) A method as defined in claim 50, wherein said at least one localized region comprises less than about 50% of a cross-section of said semiconductor wafer.

57. (New) A method as defined in claim 50, wherein said at least one localized region comprises less than about 25% of a cross-section of said semiconductor wafer.

58. (New) A method as defined in claim 50, wherein said at least one localized region comprises less than about 15% of a cross-section of said semiconductor wafer.

59. (New) A method as defined in claim 58, wherein said temperature of said at least one localized region is increased during said cooling stage.

60. (New) A method as defined in claim 58, wherein said temperature of said at least one localized region is decreased during said cooling stage.

61. (New) A method as defined in claim 50, wherein said gas used to selectively control the temperature of at least one of said localized regions is supplied by a device located below said semiconductor wafer.

62. (New) A method as defined in claim 50, wherein said gas used to selectively control the temperature of at least one of said localized regions is supplied by a device located above said semiconductor wafer.

63. (New) A method as defined in claim 62, wherein said device comprises a gas pipe having a plurality of gas outlets.
